

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
Manfred Ueberschar, et al.) Group: 1792
Serial No.: 10/783,864)
Filed: February 23, 2004)
Title: A MATERIAL WEB LAYERING METHOD)
USING A CURTAIN APPLICATOR) Examiner: Bareford, Katherine

APPEAL BRIEF OF APPELLANT

MS Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is taken from the decision of the Examiner, dated February 26, 2009 and the advisory action of May 5, 2009, finally rejecting claims 24-33, 35, 38, 39, 41-44 and 46, all of the claims that are under consideration in the above-captioned patent application. Appellants timely filed a Notice of Appeal in this matter on May 26, 2009.

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Voith Paper Patent GMVH to whom this application was assigned by the Appellants, according to the assignment document recorded with the U.S. Patent and Trademark Office on February 5, 2002 at Reel No. 012600, Frame No. 0180.

II. RELATED APPEALS AND INTERFERENCES

No related Appeals or Interferences are known to the Appellants.

III. STATUS OF CLAIMS

Pending: 24-33, 35, 38, 39, 41-44 and 46.

Canceled: 1-23, 34, 36, 37, 40 and 45.

Allowed: None.

Objected To: None.

Rejected: 24-33, 35, 38, 39, 41-44 and 46.

Withdrawn from Consideration: None.

On Appeal: 24-33, 35, 38, 39, 41-44 and 46.

A clean copy of claims 24-33, 35-38-39, 41-44 and 46, all the pending claims, is included as an Appendix to this brief.

IV. STATUS OF AMENDMENTS

No amendment was filed in this case subsequent to the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 24 is reproduced below in annotated form, with reference to the specification by page and line number and to the drawings by reference characters.

ANNOTATED CLAIM 24: A method of adding layers to a paper web (14) (page 7, lines 6 and 7), comprising the steps of:

applying at least one first layer (20) of a first application medium (18) to a paper web (14) (page 7, lines 8-10);

applying at least one second layer (26) of a second application medium (24) to said paper web (14) (page 7, lines 10-12), each of said first application medium (18) and said second application medium (24) being one of a liquid medium and a pasty medium (page 1, lines 5 and 6), at least one of said first application medium (18) and said second application medium (24) having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium (18) and said second application medium (24) having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas (page 3, line 15 through page 4, line 4), said first application medium (18) flowing to said paper web (14) in the form of a first curtain (28), said second application medium (24) flowing to said paper web (14) in the form of a second curtain (30) (page 7, lines 14 and 15);

forming a pressure differential in a space (44) partially bounded by said first curtain (28) and said second curtain (30), said pressure differential being relative to an ambient atmospheric pressure (page 8, lines 9-14), wherein said applying at least one first layer (20) step and said applying at least one second layer (26) step are carried out by an apparatus (10) (page 7, lines 6 and 7), said apparatus (10) including:

a first curtain applicator unit (16) including a first discharge nozzle (16a), said first curtain applicator unit (16) discharging the first application medium (18) through said first discharge nozzle (16a) in a form of said first curtain (28) onto a paper web (14) (page 7, lines 14-

20), said first curtain (28) moving substantially under the force of gravity (page 1, lines 11 and 12); and

a second curtain applicator unit (22) including a second discharge nozzle (22a),
said second curtain applicator unit (22) discharging said second application medium (24) through
said second discharge nozzle (22a) in a form of said second curtain (30) onto said paper web (14)
(page 7, lines 14-20), said second curtain (30) moving substantially under the force of gravity
(page 1, lines 11 and 12), said first applicator unit being positioned relative to said second
applicator unit such that a spacing (D) of about 100 mm to about 500 mm separates said first
curtain (28) and said second curtain (30) (page 8, lines 4-6), said first application medium (18) is
applied by said first curtain applicator unit (16) that is configured for applying an amount of said
first application medium (18) applied to said paper web (14), said amount being between about 2
 ml/m^2 and about 20 ml/m^2 (page 4, lines 3 and 4), said second application medium (24) is applied
to said paper web (14) at between about 5 ml/m^2 and about 30 ml/m^2 (page 4, lines 11 and 12);
enclosing said space (44) partially bounded by said first curtain (28) and said second
curtain (30) using said first curtain applicator unit (16), said second curtain applicator unit (22),
the application medium curtains (28 and 30) coming from said first curtain applicator unit (16)
and said second curtain applicator unit (22), the paper web (14) and a suction/blower box (42)
(page 8, lines 9-14);

positioning a first guideblade (32) immediately adjacent to said first discharge nozzle
(16a) (page 7, lines 14-21);

positioning a second guideblade (34) immediately adjacent to said second discharge
nozzle (22a) (page 7, lines 14-21);

setting a doctor element (36) against a surface of the paper web (14), said doctor element
(36) intercepting said first curtain (28), said doctor element (36) leading said first curtain (28) to
the paper web (14) (page 7, line 22 through page 8, line 3); and

enhancing the wetting of the curtain medium (24) from said second curtain (30) to the medium (18) from said first curtain (28) on the web (14) by providing a negative pressure in said space (44) (page 6, lines 8-11).

Independent claim 39 is reproduced below in annotated form, with reference to the specification by page and line number and to the drawings by reference characters.

ANNOTATED CLAIM 39: A method of adding layers to a paper web (14) (page 7, lines 6 and 7), comprising the steps of:

applying at least one first layer (20) of a first application medium (18) to a paper web (14) (page 7, lines 8-10);

applying at least one second layer (26) of a second application medium (24) to said paper web (14) (page 7, lines 10-12), each of said first application medium (18) and said second application medium (24) being one of a liquid medium and a pasty medium (page 1, lines 5 and 6), at least one of said first application medium (18) and said second application medium (24) having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium (18) and said second application medium (24) having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas (page 3, line 15 through page 4, line 4), said first application medium (18) flowing to said paper web (14) in the form of a first curtain (28), said second application medium (24) flowing to said paper web (14) in the form of a second curtain (30) (page 7, lines 14 and 15);

forming a pressure differential in a space (44) partially bounded by said first curtain (28) and said second curtain (30), said pressure differential being relative to an ambient atmospheric pressure (page 8, lines 9-14), wherein said applying at least one first layer (20) step and said applying at least one second layer (26) step are carried out by an apparatus (10) (page 7, lines 6 and 7), said apparatus (10) including:

a first curtain applicator unit (16) including a first discharge nozzle (16a), said first curtain applicator unit (16) discharging the first application medium (18) through said first discharge nozzle (16a) in a form of said first curtain (28) onto a paper web (14) (page 7, lines 14-20), said first curtain (28) moving substantially under the force of gravity (page 1, lines 11 and 12); and

a second curtain applicator unit (22) including a second discharge nozzle (22a), said second curtain applicator unit (22) discharging said second application medium (24) through said second discharge nozzle (22a) in a form of said second curtain (30) onto said paper web (14) (page 7, lines 14-20), said second curtain (30) moving substantially under the force of gravity (page 1, lines 11 and 12), said first applicator unit (16) being positioned relative to said second applicator unit (22) such that a spacing (D) of about 100 mm to about 500 mm separates said first curtain (28) and said second curtain (30) (page 8, lines 4-6), said first application medium (18) is applied by said first curtain applicator unit (16) that is configured for applying an amount of said first application medium (18) applied to said paper web (14), said amount being between about 2 ml/m^2 and about 20 ml/m^2 (page 4, lines 3 and 4), said second application medium (24) is applied to said paper web (14) at between about 5 ml/m^2 and about 30 ml/m^2 (page 4, lines 11 and 12);

enclosing said space (44) partially bounded by said first curtain (28) and said second curtain (30) using said first curtain applicator unit (16), said second curtain applicator unit (22), the application medium curtains (28 and 30) coming from said first curtain applicator unit (16) and said second curtain applicator unit (22), the paper web (14) and a suction/blower box (42) (page 8, lines 9-14);

positioning a first guideblade (32) immediately adjacent to said first discharge nozzle (16a) (page 7, lines 14-21);

positioning a second guideblade (34) immediately adjacent to said second discharge nozzle (22a) (page 7, lines 14-21);

setting a doctor element (36) against a surface of the paper web (14), said doctor element (36) intercepting said first curtain (28), said doctor element (36) leading said first curtain (28) to the paper web (14) (page 7, line 22 through page 8, line 3); and

enhancing the wetting of the curtain medium (24) from said second curtain (30) to the medium (18) from said first curtain (28) on the web (14) by providing a negative pressure in said space (44) (page 6, lines 8-11); and

producing one of a vacuum and a positive pressure with a pressure-differential device (42), said pressure-differential device (42) being operatively positioned between said first curtain applicator unit (16) and said second curtain applicator unit (22) (page 8, lines 9-14).

Independent claim 46 is reproduced below in annotated form, with reference to the specification by page and line number and to the drawings by reference characters.

ANNOTATED CLAIM 46: A method of adding layers to a paper web (14) (page 7, lines 6 and 7), comprising the steps of:

applying at least one first layer (20) of a first application medium (18) to a paper web (14) (page 7, lines 8-10);

applying at least one second layer (26) of a second application medium (24) to said paper web (14) (page 7, lines 10-12), each of said first application medium (18) and said second application medium (24) being one of a liquid medium and a pasty medium (page 1, lines 5 and 6), at least one of said first application medium (18) and said second application medium (24) having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium (18) and said second application medium (24) having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas

(page 3, line 15 through page 4, line 4), said first application medium (18) flowing to said paper web (14) in the form of a first curtain (28), said second application medium (24) flowing to said paper web (14) in the form of a second curtain (30) (page 7, lines 14 and 15);

forming a pressure differential in a space (44) partially bounded by said first curtain (28) and said second curtain (30), said pressure differential being relative to an ambient atmospheric pressure (page 8, lines 9-14), wherein said applying at least one first layer (20) step and said applying at least one second layer (26) step are carried out by an apparatus (10) (page 7, lines 6 and 7), said apparatus (10) including:

a first curtain applicator unit (16) including a first discharge nozzle (16a), said first curtain applicator unit (16) discharging the first application medium (18) through said first discharge nozzle (16a) in a form of said first curtain (28) onto a paper web (14) (page 7, lines 14-20), said first curtain (28) moving substantially under the force of gravity (page 1, lines 11 and 12); and

a second curtain applicator unit (22) including a second discharge nozzle (22a), said second curtain applicator unit (22) discharging said second application medium (24) through said second discharge nozzle (22a) in a form of said second curtain (30) onto said paper web (14) (page 7, lines 14-20), said second curtain (30) moving substantially under the force of gravity (page 1, lines 11 and 12), said first applicator unit being positioned relative to said second applicator unit such that a spacing (D) of about 100 mm to about 500 mm separates said first curtain (28) and said second curtain (30) (page 8, lines 4-6), said first application medium (18) is applied by said first curtain applicator unit (16) that is configured for applying an amount of said first application medium (18) applied to said paper web (14), said amount being between about 2 ml/m² and about 20 ml/m² (page 4, lines 3 and 4), said second application medium (24) is applied to said paper web (14) at between about 5 ml/m² and about 30 ml/m² (page 4, lines 11 and 12);

enclosing said space (44) partially bounded by said first curtain (28) and said second curtain (30) using said first curtain applicator unit (16), said second curtain applicator unit (22), the application medium curtains coming from said first curtain applicator unit (16) and said second curtain applicator unit (22), the paper web (14) and a suction/blower box (42) (page 8, lines 9-14);

positioning a first guideblade (32) immediately adjacent to said first discharge nozzle (16a) (page 7, lines 14-21);

positioning a second guideblade (34) immediately adjacent to said second discharge nozzle (22a) (page 7, lines 14-21);

setting a doctor element (36) against a surface of the paper web (14), said doctor element (36) intercepting said first curtain (28), said doctor element (36) leading said first curtain (28) to the paper web (14) (page 7, line 22 through page 8, line 3); and

stabilizing said first curtain (28) and said second curtain (30) by applying a positive pressure in said space (44) (page 6, lines 12-15).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Whether claims 24-33, 35, 38, 39, 41-44 and 46 are unpatentable over U.S. Patent No. 4,230,743 (Nakamura et al.) in view of US Patent No. 5,206,057 (Finnicum et al.) and in further view of US Patent No. 5,908,668 (Bülow et al.) and Japanese Patent No. 06-262129 (JP 129).
- B. Whether claim 35 is unpatentable over Nakamura et al. in view of Finnicum et al. and in further view of US Patent No. 5,192,592 (Shay).

VII. ARGUMENT

A. CLAIMS 24-33, 38, 39, 41-44 and 46 ARE PATENTABLE UNDER 35 U.S.C. § 103(a).

In the final Office Action dated February 26, 2009, claims 24-33, 38, 39, 41-44 and 46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura et al., Finnicum et al., Bülow et al. and JP'129. However, Appellants submit that claims 24-33, 38, 39, 41-44 and 46 are neither taught disclosed nor suggested by the cited prior art references; alone or in combination and that the claims are therefore in condition for allowance.

1. The teaching of the cited references.

Nakamura et al. disclose a process for producing pressure sensitive copying paper (Figs. 3 and 4) using a coating solution 1 containing microcapsules as a main component. A wind shielding plate 11 is placed upstream of the contact area so that the free fall of the material reaches web 9 without being disturbed (column 4, lines 8-55). The coating apparatus shown in Fig. 4 has a first coating apparatus and a second coating apparatus positioned subsequent to the first coating apparatus in the direction of flow of web 9. Web 9 goes through a first curtain and a second curtain flow as it proceeds in the direction of the arrow shown on web 9 of Fig. 4. The second coating layer is formed on the first coating layer while the first coating layer is in an undried state (column 7, lines 1-50).

Finnicum et al. show a device for applying a curtain coating for photographic film in which a multi-layer material passes through slots 14 and is dropped onto a web by gravity. The curtain 17 is bounded by sidewalls 19, 20 and a lateral wall 21. A valve mechanism permits a fluid to pressurize the space between the curtain 17 and the perimeter walls via a conduit 22 and valve 23 in order to control where on the arc of the web the curtain 17 impinges. There is a space between the web and the walls (column 3, lines 20-52).

Bülow et al. disclose a curtain coating apparatus having a planer deflector surface (Figs. 1 and 2) including a reservoir 10. Below pouring head 1 there is a planar deflector surface 20 that is a portion of a baffle plate 2. Solder resist flows out of reservoir 10 of pouring head 1 through slot 11 and descends in the form of a curtain firstly onto deflector surface 20 of baffle plate 2 and runs downward along deflector surface 20 until it reaches a cutoff edge 21 at the lower end of deflector surface 20. From there, the solder resist descends in the form of a pouring curtain LV. In the region between pouring blades 3, pouring curtain LV falls onto board 4, for example a printed circuit board, essentially along the line of impact, whereas the solder resist of pouring curtain LV outside of that region passes into diversion troughs 30 where it is caught and fed to a collection trough, not shown (column 3, line 45 - column 4, line 4).

JP 129 illustrates in Fig. 1 a coating 8 that falls onto a blade 18 with the coating then flowing along blade 18 until it contacts a surface of material 1 that is to be coated (English abstract and Figs. 1 and 2).

2. Claims 24-33, 38 and 41-44 are patentable over Nakamura et al., Finnicum et al., Bülow et al. and JP'129.

In contrast, claim 24 as previously amended, recites in part:

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;

positioning a second guideblade immediately adjacent to said second discharge nozzle;

setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and

enhancing the wetting of said curtain medium from said second curtain to said medium from said first curtain on the web by providing a negative pressure in said space.

(Emphasis added). Appellants submit that such an invention is neither taught, disclosed, nor suggested by Nakamura et al., Finnicum et al., Bülow et al., JP'129 or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Nakamura et al., disclose a process for producing pressure sensitive copying paper including a coating solution that contains microcapsules as a main component. Finnicum et al. discloses a device for applying a curtain coating for photographic film in which a multilayer material passes through slots and is dropped onto a web by gravity. Bülow et al. disclose a curtain coating apparatus having a planer deflector surface including a reservoir that holds solder resist. JP 129 illustrates a coating that falls onto a blade with the coating then flowing along the blade until it contacts the surface of the material that is to be coated. None of the references teach the enclosing of a space, which is bounded by elements described in the independent claim, since Nakamura et al. is obviously open, and Finnicum et al. discloses the existence of a space between the web and the walls. Further, none of the references teach the enhancement of wetting of the curtain mediums by providing a negative pressure in the space that is bounded by the curtains, as recited in claim 24. Appellants' invention is taught away from by the Finnicum et al. reference in that the wall precludes the enhancement step brought about by the interaction of the space and the two application mediums. Further, none of the references teach the combination of a doctor element intercepting a curtain that has flowed over a guideblade as is claimed in Appellants' independent claim. As a result of this stabilization of the application medium curtain, the total falling height of the curtain and, therefore, the extent of the force of gravity which can be achieved overall can be increased, as compared with a conventional free-falling application medium curtain, without penalties with regard to the quality of the application medium layer

formed therewith. This set-up makes it possible to approach more closely the film stretching limit, limited by the physical properties of the application medium, at which oscillatory waves having a detrimental effect on the uniformity of the coating are formed in the metered film, than was hitherto possible with a free-falling application medium curtain. Further, the Examiner has indicated in the Advisory Action dated May 5, 2009 that the wall of Finnicum shows a need for an enclosing means, which Appellants disagree in that space is indicated to exist between the curtain and the enclosing wall of Finnicum et al. Further, the interaction between the two curtains as a part of the enclosed space, as claimed by Appellants, allows an interaction between the two curtains that is not disclosed or anticipated by the combining of the prior art references. Therefore, Nakamura et al., Finnicum et al., Bülow et al., JP 129, and any of the other cited references, alone or in combination, fail to disclose, teach, or suggest the steps of enclosing the space partially bounded by the first curtain and the second curtain using the first curtain applicator and the second curtain applicator unit, the application medium curtains coming from the first curtain applicator unit and the second curtain applicator unit, the paper web, and a suction/blower box, the positioning of a first guideblade immediately adjacent to the first discharge nozzle, the positioning of a second guideblade immediately adjacent to the second discharge nozzle, setting a doctor element against the surface of the paper web, the doctor element intercepting the first curtain, the doctor element leading the first curtain to the paper web, and enhancing the wetting of the curtain medium from the second curtain to the medium from the first curtain on the web by providing a negative pressure in the space, as recited by claim 24.

Appellants' invention has distinct advantages in that the combination of the elements of enclosing the space so that the pressure therein is utilized to affect the coating characteristics and, more particularly, the application of a negative or positive pressure in the space to enhance the wetting or stabilize the curtain falling from a guideblade positively influenced. For all of the

foregoing reasons, Appellants submit that claim 24 and claims 25-33, 38 and 41-44 depending therefrom, are in condition for allowance, which is hereby respectfully requested.

3. Claim 46 is patentable over Nakamura et al., Finnicum et al., Bülow et al. and JP'129.

In further contrast, claim 46 as previously amended, recites in part:

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;

positioning a second guideblade immediately adjacent to said second discharge nozzle;

setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and

stabilizing said first curtain and said second curtain by applying a positive pressure in said space.

(Emphasis added). Appellants submit that such an invention is neither taught, disclosed, nor suggested by Nakamura et al., Finnicum et al., Bülow et al., JP'129 or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Nakamura et al., disclose a process for producing pressure sensitive copying paper including a coating solution that contains microcapsules as a main component. Finnicum et al. discloses a device for applying a curtain coating for photographic film in which a multilayer material passes through slots and is dropped onto a web by gravity. Bülow et al. disclose a curtain coating apparatus having a planer deflector surface including a reservoir that holds solder resist. JP 129 illustrates a coating that falls onto a blade with the coating then flowing along the blade until it contacts the surface of the material that is to be coated. None of the references teach

the enclosing of a space, which is bounded by elements described in the independent claim, since Nakamura et al. is obviously open, and Finnicum et al. discloses the existence of a space between the web and the walls. Further, none of the references teach the stabilizing of the curtains by applying a positive pressure as recited in claim 46. Appellants' invention is taught away from by the Finnicum et al. reference in that the wall precludes the enhancement step brought about by the interaction of the space and the two application mediums. Further, none of the references teach the combination of a doctor element intercepting a curtain that has flowed over a guideblade as is claimed in Appellants' independent claim. As a result of this stabilization of the application medium curtain, the total falling height of the curtain and, therefore, the extent of the force of gravity which can be achieved overall can be increased, as compared with a conventional free-falling application medium curtain, without penalties with regard to the quality of the application medium layer formed therewith. This set-up makes it possible to approach more closely the film stretching limit, limited by the physical properties of the application medium, at which oscillatory waves having a detrimental effect on the uniformity of the coating are formed in the metered film, than was hitherto possible with a free-falling application medium curtain. Therefore, Nakamura et al., Finnicum et al., Bülow et al., JP 129, and any of the other cited references, alone or in combination, fail to disclose, teach, or suggest the steps of enclosing the space partially bounded by the first curtain and the second curtain using the first curtain applicator and the second curtain applicator unit, the application medium curtains coming from the first curtain applicator unit and the second curtain applicator unit, the paper web, and a suction/blower box, the positioning of a first guideblade immediately adjacent to the first discharge nozzle, the positioning of a second guideblade immediately adjacent to the second discharge nozzle, setting a doctor element against the surface of the paper web, the doctor element intercepting the first curtain, the doctor element leading the first curtain to the paper web, and stabilizing the first curtain and the second curtain by applying a positive pressure in the space, as recited in claim 46.

Appellants' invention has distinct advantages in that the combination of the elements of enclosing the space so that the pressure therein is utilized to affect the coating characteristics and, more particularly, the application of a negative or positive pressure in the space to enhance the wetting or stabilize the curtain falling from a guideblade positively influenced. For all of the foregoing reasons, Appellants submit that claim 46 is in condition for allowance, which is hereby respectfully requested.

4. Claim 39 is patentable over Nakamura et al., Finnicum et al., Bülow et al. and JP'129:

In contrast to the cited prior art, claim 39 recites in part:

producing one of a vacuum and a positive pressure with a pressure-differential device, said pressure-differential device being operative positioned between said first curtain applicator unit and said second curtain applicator unit.

(Emphasis added). Appellants submit that such an invention is neither taught, disclosed, nor suggested by Nakamura et al., Finnicum et al., Bülow et al., JP'129 or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Nakamura et al., disclose a process for producing pressure sensitive copying paper including a coating solution that contains microcapsules as a main component. Finnicum et al. discloses a device for applying a curtain coating for photographic film in which a multilayer material passes through slots and is dropped onto a web by gravity. Bülow et al. disclose a curtain coating apparatus having a planer deflector surface including a reservoir that holds solder resist. JP 129 illustrates a coating that falls onto a blade with the coating then flowing along the blade until it contacts the surface of the material that is to be coated. In contrast, to these references, Appellants have recited that the pressure-differential device is operatively positioned between the first curtain applicator unit and the second curtain applicator unit. As can be seen in the figures of the cited prior art and the text of the associated specifications, none of those

references disclose the positioning of a pressure differential device operatively between the first and second curtain applicator units. Therefore, Nakamura et al., Finnicum et al., Bülow et al., JP 129, and any of the other cited references alone or in combination fail to disclose, teach, or suggest the step of producing a vacuum or a positive pressure with a pressure-differential device, the pressure-differential device being operative positioned between the first curtain applicator unit and the second curtain applicator unit, as recited in claim 39.

B. CLAIM 35 IS PATENTABLE UNDER 35 USC § 103(a)

In the Final Office Action, claim 35 was rejected under 35 USC § 103(a) as being unpatentable over Nakamura et al., in view of Finnicum et al. and in further view of Shay. However, claim 35 depends from claim 24, and claim 24 is now in condition for allowance for the reasons given above. Accordingly, Appellants submit that claim 35 is now in condition for allowance, which is hereby respectfully requested.

CONCLUSION

The arguments above are further to the arguments previously presented in the pre-Appeal Brief filed on May 26, 2009.

For the foregoing reasons, Appellants submit that claims 24-33, 35, 38, 39, 41-44 and 46 are neither taught, disclosed, nor suggested by the cited references, alone or in combination, and the pending claims are therefore in condition for allowance in their present form. Accordingly, Appellants respectfully request the Board to reverse the final rejections of the appealed claims.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

24. A method of adding layers to a paper web, comprising the steps of:

applying at least one first layer of a first application medium to a paper web;

applying at least one second layer of a second application medium to said paper web, each

of said first application medium and said second application medium being one of a liquid

medium and a pasty medium, at least one of said first application medium and said second

application medium having a solids content in an approximate range of 2% by weight to 70% by

weight, at least one of said first application medium and said second application medium having a

Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas,

said first application medium flowing to said paper web in the form of a first curtain, said second

application medium flowing to said paper web in the form of a second curtain;

forming a pressure differential in a space partially bounded by said first curtain and said

second curtain, said pressure differential being relative to an ambient atmospheric pressure,

wherein said applying at least one first layer step and said applying at least one second layer step

are carried out by an apparatus, said apparatus including:

a first curtain applicator unit including a first discharge nozzle, said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain onto a paper web, said first curtain moving substantially under the force of gravity; and

a second curtain applicator unit including a second discharge nozzle, said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain onto said paper web, said second curtain moving substantially under the force of gravity, said first applicator unit being positioned relative to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain, said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said paper web, said amount being between about 2 ml/m² and about 20 ml/m², said second application medium is applied to said paper web at between about 5 ml/m² and about 30 ml/m²:

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;
positioning a second guideblade immediately adjacent to said second discharge nozzle;
setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and enhancing the wetting of the curtain medium from said second curtain to the medium from said first curtain on the web by providing a negative pressure in said space.

25. The method of claim 24, wherein said first application medium has a first water retention capacity, said second application medium having a second water retention capacity, said first water retention capacity being lower than said second water retention capacity.

26. The method of claim 24, wherein said first application medium has a first density, said second application medium having a second density, said first density being at least about 10% greater than said second density.

27. The method of claim 24, wherein said first application medium has a first viscosity, said second application medium having a second viscosity, said first viscosity being greater than said second viscosity.

28. The method of claim 24, wherein at least one of said first application medium and said second application medium is one of an aqueous solution and an aqueous dispersion of solid particles.

29. The method of claim 28, wherein said at least one of said first application medium and said second application medium is one of an acrylate dispersion and a butadiene-styrene dispersion.

30. The method of claim 28, wherein said solid particles are one of mineral pigments and microscopic plastic particles.

31. The method of claim 28, wherein said solid particles are one of plastic pigments, ink-filled microcapsules and starch.

32. The method of claim 24, wherein said first application medium is used for forming a barrier layer, said first application medium having at least one of said following properties:
a solids content in an approximate range of 2% by weight to 30% by weight;

a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 150 mPas; and

a density of between about 0.8 g/cm³ and about 1.1 g/cm³.

33. The method of claim 24, wherein said first application medium is a starch solution.

35. The method of claim 24, wherein said second application medium is a dispersion of ink-filled microcapsules, each of said microcapsules having a microcapsule diameter associated therewith, said second application medium having at least one of said following properties:

each of said microcapsules having a microcapsule diameter of between about 5 µm and about 12 µm;

a solids content of between about 20% by weight and about 50% by weight; and

a Brookfield viscosity determined at 100 rev/min of between about 100 mPas and about 400 mPas.

38. The method of claim 24, wherein at least one of said first curtain applicator unit and said second curtain applicator unit applies said first application medium and said second application medium, respectively, to said paper web in a substantially finally metered manner.

39. A method of adding layers to a paper web, comprising the steps of:

applying at least one first layer of a first application medium to a paper web;

applying at least one second layer of a second application medium to said paper web, each of said first application medium and said second application medium being one of a liquid medium and a pasty medium, at least one of said first application medium and said second application medium having a solids content in an approximate range of 2% by weight to 70% by

weight, at least one of said first application medium and said second application medium having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas, said first application medium flowing to said paper web in the form of a first curtain, said second application medium flowing to said paper web in the form of a second curtain;

forming a pressure differential in a space partially bounded by said first curtain and said second curtain, said pressure differential being relative to an ambient atmospheric pressure, wherein said applying at least one first layer step and said applying at least one second layer step are carried out by an apparatus, said apparatus including:

a first curtain applicator unit including a first discharge nozzle, said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain onto a paper web, said first curtain moving substantially under the force of gravity; and

a second curtain applicator unit including a second discharge nozzle, said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain onto said paper web, said second curtain moving substantially under the force of gravity, said first applicator unit being positioned relative to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain, said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said paper web, said amount being between about 2 ml/m² and about 20 ml/m², said second application medium is applied to said paper web at between about 5 ml/m² and about 30 ml/m²:

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;

positioning a second guideblade immediately adjacent to said second discharge nozzle;

setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and

enhancing the wetting of the curtain medium from said second curtain to the medium from said first curtain on the web by providing a negative pressure in said space; and

producing one of a vacuum and a positive pressure with a pressure-differential device, said pressure-differential device being operatively positioned between said first curtain applicator unit and said second curtain applicator unit.

41. The method of claim 24, wherein each of said first curtain and said second curtain has a curtain height of between about 40 mm and about 400 mm.

42. The method of claim 24, wherein said first curtain applicator unit and said second curtain applicator unit discharge said first application medium and said second application medium, respectively, onto said paper web at a rate of between about 4 l/min and about 100 l/min per meter of working width.

43. The method of claim 24, wherein said paper web includes paper and cardboard, said paper web having a base running speed associated therewith, said base running speed being up to 3000 m/min for coating of said paper, said base running speed being at least 200 m/min for coating of said cardboard.

44. The method of claim 43, wherein said first curtain applicator unit and said second curtain applicator unit together produce a grammage of coated paper web of between about 30

g/m² and about 150 g/m² for coating of said paper web and between about 150 g/m² and 1000 g/m² for coating of said cardboard.

46. A method of adding layers to a paper web, comprising the steps of:
 - applying at least one first layer of a first application medium to a paper web;
 - applying at least one second layer of a second application medium to said paper web, each of said first application medium and said second application medium being one of a liquid medium and a pasty medium, at least one of said first application medium and said second application medium having a solids content in an approximate range of 2% by weight to 70% by weight, at least one of said first application medium and said second application medium having a Brookfield viscosity determined at 100 rev/min of between about 10 mPas and about 2000 mPas, said first application medium flowing to said paper web in the form of a first curtain, said second application medium flowing to said paper web in the form of a second curtain;
 - forming a pressure differential in a space partially bounded by said first curtain and said second curtain, said pressure differential being relative to an ambient atmospheric pressure, wherein said applying at least one first layer step and said applying at least one second layer step are carried out by an apparatus, said apparatus including:
 - a first curtain applicator unit including a first discharge nozzle, said first curtain applicator unit discharging the first application medium through said first discharge nozzle in a form of said first curtain onto a paper web, said first curtain moving substantially under the force of gravity; and
 - a second curtain applicator unit including a second discharge nozzle, said second curtain applicator unit discharging said second application medium through said second discharge nozzle in a form of said second curtain onto said paper web, said second curtain moving substantially under the force of gravity, said first applicator unit being positioned relative

to said second applicator unit such that a spacing of about 100 mm to about 500 mm separates said first curtain and said second curtain, said first application medium is applied by said first curtain applicator unit that is configured for applying an amount of said first application medium applied to said paper web, said amount being between about 2 ml/m² and about 20 ml/m², said second application medium is applied to said paper web at between about 5 ml/m² and about 30 ml/m²;

enclosing said space partially bounded by said first curtain and said second curtain using said first curtain applicator unit, said second curtain applicator unit, the application medium curtains coming from said first curtain applicator unit and said second curtain applicator unit, the paper web and a suction/blower box;

positioning a first guideblade immediately adjacent to said first discharge nozzle;
positioning a second guideblade immediately adjacent to said second discharge nozzle;
setting a doctor element against a surface of the paper web, said doctor element intercepting said first curtain, said doctor element leading said first curtain to the paper web; and stabilizing said first curtain and said second curtain by applying a positive pressure in said space.

IX. EVIDENCE APPENDIX

No additional evidence is being provided by the Appellants at this time.

X. RELATED PROCEEDINGS APPENDIX

No additional proceedings are known to the Appellants.